

What is claimed is:

1. A silver halide emulsion comprising silver halide grains containing at least 90 mol% chloride, 0.02 to 5.0 mol% bromide and 0 to 2.0 mol% iodide, wherein the silver halide emulsion is prepared by a process comprising the steps of (i) forming a silver halide grain emulsion, (ii) subjecting the silver halide emulsion to desalting to remove soluble salts and (iii) subjecting the desalted silver halide emulsion to chemical sensitization by adding a chemical sensitizer, wherein in the step (iii), at least one compound represented by the following formula (1) to (4) is added before adding a chemical sensitizer and at least one compound represented by the following formula (1) to (4) is further added after adding a chemical sensitizer:

formula (1) $R-SO_2S-M$

formula (2) $R_1-SO_2S-R_2$

formula (3) $R_3-SO_2S-L_m-SSO_2-R_4$

wherein R, R_1 , R_2 , R_3 , and R_4 are each an aliphatic group, an aromatic group or a heterocyclic group; M is a cation; L is a divalent linkage group; and m is 0 or 1;

formula (4) $R_{11}-(S)_{m1}-R_{12}$

wherein R_{11} and R_{12} are each an aliphatic group, an aromatic group or a heterocyclic group, or R_{11} and R_{12} combine with each other to form a ring; m_1 is an integer of 2 to 6.

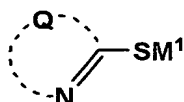
2. The silver halide emulsion of claim 1, wherein in the step (iii), at least one compound represented by formula (1) to (3) is added before adding a chemical sensitizer and at least one compound selected from the group consisting of compounds represented by formula (1) to (3) is further added after adding a chemical sensitizer.

3. The silver halide emulsion of claim 1, wherein in the step (iii), at least one compound represented by formula (4) is added before adding a chemical sensitizer and at least one compound represented by formula (4) is further added after adding a chemical sensitizer.

4. The silver halide emulsion of claim 1, wherein in the step (iii), at least one compound represented by formula (1) to (3) and at least one compound represented by formula (4) are added before completing the chemical sensitization.

5. The silver halide emulsion of claim 4, wherein in the step (iii), said at least one compound represented by formula (1) to (3) and at least one compound represented by formula (4) are added in the presence of a compound represented by the following formula (S):

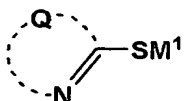
formula (S)



wherein Q is an atomic group necessary to form a 5- or 6-membered nitrogen-containing ring; M¹ is a hydrogen atom, alkali metal or a cation group.

6. The silver halide emulsion of claim 1, wherein the silver halide grains include in the interior of the grains a compound represented by the following formula (S):

formula (S)



wherein Q is an atomic group necessary to form a 5- or 6-membered nitrogen-containing ring; M¹ is a hydrogen atom, alkali metal or a cation group.

7. The silver halide emulsion of claim 1, wherein the silver halide grains include in the interior of the grains at least a Group 8 metal compound and at least an iridium compound.

8. A silver halide photographic material comprising on a support at least one image forming layer, wherein the image forming layer comprises a silver halide emulsion as claimed in claim 1.

9. A method of preparing a silver halide emulsion comprising silver halide grains containing at least 90 mol% chloride, 0.02 to 5.0 mol% bromide and 0 to 2.0 mol% iodide, the process comprising the steps of:

(i) forming a silver halide grain emulsion by mixing a silver salt and a halide salt to form silver halide host grains,

(ii) subjecting the silver halide grain emulsion to desalting to remove soluble salts and

(iii) subjecting the desalted silver halide emulsion to chemical sensitization by adding a chemical sensitizer

wherein in the step (iii), at least one compound represented by the following formula (1) to (4) is added

before adding a chemical sensitizer and at least one compound represented by formula (1) to (4) is further added after adding a chemical sensitizer:

formula (1) $R-SO_2S-M$

formula (2) $R_1-SO_2S-R_2$

formula (3) $R_3-SO_2S-L_m-SSO_2-R_4$

wherein R, R_1 , R_2 , R_3 , and R_4 are each an aliphatic group, an aromatic group or a heterocyclic group; M is a cation; L is a divalent linkage group; and m is 0 or 1;

formula (4) $R_{11}-(S)_{m1}-R_{12}$

wherein R_{11} and R_{12} are each an aliphatic group, an aromatic group or a heterocyclic group, or R_{11} and R_{12} combine with each other to form a ring; $m1$ is an integer of 2 to 6.

10. The method of claim 9, wherein in the step (iii), at least one compound represented by formula (1) to (3) is added before adding a chemical sensitizer and at least one compound selected from the group consisting of compounds represented by formula (1) to (3) is further added after adding a chemical sensitizer.

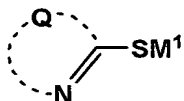
11. The method of claim 9, wherein in the step (iii), at least one compound represented by formula (4) is added

before adding a chemical sensitizer and at least one compound represented by formula (4) is further added after adding a chemical sensitizer.

12. The method of claim 9, wherein in the step (iii), at least one compound represented by formula (1) to (3) and at least one compound represented by formula (4) are added before completing the chemical sensitization.

13. The silver halide emulsion of claim 12, wherein in the step (iii), a compound represented by the following formula (S) is added before adding a chemical sensitizer:

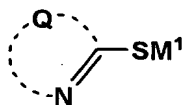
formula (S)



wherein Q is an atomic group necessary to form a 5- or 6-membered nitrogen-containing ring; M¹ is a hydrogen atom, alkali metal or a cation group.

14. The method of claim 9, wherein a compound represented by the following formula (S) is added at a time during the step (i):

formula (S)



wherein Q is an atomic group necessary to form a 5- or 6-membered nitrogen-containing ring; M¹ is a hydrogen atom, alkali metal or a cation group.

15. The method of claim 9, wherein at least a Group 8 metal compound and at least an iridium compound are added at a time during the step (i).